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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/090,342	03/01/2002	Vijay Krishnan Ganesan	020431.1105	3898

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EXAMINER

KRAMER, JAMES A

ART UNIT PAPER NUMBER

3692

DATE MAILED: 10/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/090,342	<b>Applicant(s)</b> GANESAN ET AL.	
	<b>Examiner</b> James A. Kramer	<b>Art Unit</b> 3627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-4,7-11,14-18 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,7-11,14-18 and 21-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/28/06 has been entered.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 7-11, 14-18, and 21-23 rejected under 35 U.S.C. 103(a) as being unpatentable over “Multi-Objective Optimization using Evolutionary Algorithms” by Kalyanmoy Deb (hereinafter Deb).

Deb teaches optimization as finding one or more solutions which correspond to extreme values of one or more objectives. Further, optimization is of great importance in the area of business decision making (see 1<sup>st</sup> paragraph on page 1). Examiner notes that this represents identifying an allocation problem.

Deb teaches an when optimization problem involves more than one objective function, the task of finding one or more optimum solutions is known as multi-objective optimizations and in the parlance of management, such search and optimization problems are known as multiple criterion decision-making (MCDM) (see 3<sup>rd</sup> paragraph on page 1). Deb further teaches that each objective function includes decision variables (see last paragraph on page 13). Examiner notes that this represents selecting one or more objective functions, each objective function having a variable, each variable representing a solution requiring optimization.

Deb teaches constrained optimization is important in practice, since most real-world optimization problems involve constraints restricting some properties of the system to lie within pre-specified limits (see paragraph spanning pages 2 and 3). Examiner notes that this represents receiving at least one constraint constraining at least one variable.

Deb further teaches a weighted sum method which scalarizes a set of objectives into a single (combined) objective function by pre-multiplying each objective with a weight. Further the system might attempt to make objectives equally important first or normalize the objectives. (see Weighted Sum Method starting on page 50). Examiner notes that this represents optimizing a first and second objective function to determine a first and second normalization factor respectively and generating a combined objective function using the first objective function normalized by the first normalization factor and weighted by a first weighting factor and using the second objective function normalized by the second normalization factor and weighted by a second weighting factor and optimizing the combined objective function.

Examiner finally notes that generating a solution to the objective function of Deb represents determining solution according to the values to generate an optimized plan.

Examiner notes the while Deb teaches optimization as an important element in business decision making (once again see 1<sup>st</sup> paragraph on page 1) Deb fails to specifically teach a parts allocation problem. Examiner argues that utilizing the optimization teachings of Deb for a parts allocation problem, as in Applicant's claimed invention, is an aesthetic design choice (see MPEP 2144.04 (I). In this particular case it is the position of the Examiner that the specific type of problem to be solved does not patentably distinguish the claimed invention over the prior art. The optimization techniques of Deb are meant to be applied to a broad range of business problems e.g. designing a solution for minimum possible cost of fabrication or for maximum possible reliability, or others (see 1<sup>st</sup> paragraph on page 1) and as such the reference clearly suggests a parts allocation problem.

Further, Examiner asserts that the type of problem to be solved does not alter or impact the optimization steps. Specifically, the steps of selecting objective function, receiving constraints and optimizing the objective functions are independent of the problem to be solved.

Based on these points Examiner believes that the claimed invention is unpatentable over Deb.

***Response to Arguments***

Applicant's arguments filed 8/11/06 have been fully considered but they are not persuasive.

On pages 10-15, Applicant continuously asserts that, "the Examiner has mischaracterized the Applicant's invention." However, Applicant fails to ever clarify this supposed mischaracterization. Rather, Applicant merely quotes the claimed language back. Examiner has given the claimed limitations their broadest reasonable interpretation. Examiner believes that the Office's position with respect to the broadest reasonable interpretation of the claims is clear from the rejection of the claims. Since Applicant as provided no alternative interpretation, Examiner maintains the rejection of the claims under this interpretations.

On pages 15-16 the Applicant challenges Examiner's use of design choice. As Examiner pointed out in the office action mailed 5/11/06 and noted by Applicant in the response support for this analysis is found in MPEP 2144.04(I). Further, this section states that, "the courts found that matters relating to ornamentation only which have no mechanical function cannot be relied upon to patentable distinguish the claimed invention from the prior art." In this case, Deb teaches use of the optimization techniques in a broad range of business problems. Clearly the exact type of problem has no function significance on the optimization steps. This is particularly true with respect to Applicant invention which claims;

1. selecting variables (parts and suppliers)
2. selecting an objection function
3. receiving constraints

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4. optimizing the objective functions (1<sup>st</sup>, 2<sup>nd</sup> and combined)

5. finding a solution

It is the position of the Examiner that reciting that the variables are parts and suppliers renders the Invention non-obvious in view of Deb.

On pages 16 and 17 Applicant asserts that “the purported advantage relied on by the Examiner is nowhere disclosed, taught or suggested in Dev or Examiner’s Official Notice.” Examiner is not sure what the “purported advantages” Applicant is referencing. In the rejection, the Examiner relies upon the Legal Precedent discussed in MPEP 2144.04(I) as a rationale supporting the rejection under 35 USC 103.

On pages 18-19 Applicant once again asserts that the Examiner has failed to establish a prima facie case of obviousness. Examiner respectfully disagrees.

On the first paragraph on page 19, Applicant appears to be asserting (based on the use of emphasis) that there isn’t a reasonable expectation of success. Examiner points to the teaching of Deb which discloses that the use of the optimization techniques can be used on a broad category of business problems. Clearly there is a reasonable expectation of success.

On the second paragraph on page 19, Applicant argues that “the Examiner has not shown the Applicant’s claimed invention to be expressly or impliedly suggested in Deb or the Examiner’s Official Notice nor has the Examiner presented a convincing line of reasoning, or any line of reasoning why the artisan would have found Applicant’s claimed invention obvious in view of Deb or Examiner’s Official Notice.” Examiner respectfully disagrees. First Examiner

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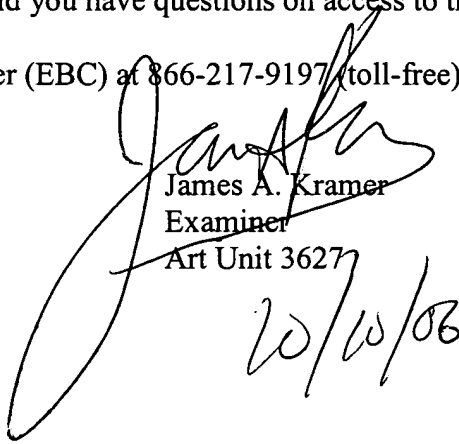
once again points to the teaching of Deb which discloses the use of optimization techniques on a broad range of business problems. Clearly, at the very least this “impliedly” suggests Applicant’s claimed invention. Further, Examiner use of design choice, as outlined in MPEP 2144.04(I) represents a “line of reasoning why the artisan would have found Applicant’s claimed invention obvious in view of Deb.”

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Kramer whose telephone number is (571) 272 6783. The examiner can normally be reached on Monday - Friday (8AM - 5PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Alexander Kalinowski can be reached on (571) 272 6771. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
James A. Kramer  
Examiner  
Art Unit 3627  
20/10/06

jak  
10/10/06